**Teacher's Masters**

California Education and the Environment Initiative

6

Science Standard
6.6.a.

CALIFORNIA EEI Education and the Environment Initiative

# Energy: It's Not All the Same to You!

**California Education and the Environment Initiative**

Approved by the California State Board of Education, 2010

**The Education and the Environment Initiative Curriculum is a cooperative endeavor of the following entities:**

California Environmental Protection Agency

California Natural Resources Agency

California State Board of Education

California Department of Education

Department of Resources Recycling and Recovery (CalRecycle)

**Key Partners:**

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# Contents

# Where do we get it?

# What are the byproducts and effects of using it?

## How do these byproducts and effects change the air, land, and water?

Biomass

Coal

Geothermal Power

Hydropower

Natural Gas

Nuclear Power

Solar Power

Wind Power

Name: _____

## Part 1

**Instructions:** Select the best answer and circle the correct letter. (2 points each)

1. Which of the following is not a source of energy in California's power mix?
   a. natural gas
   b. moving water
   c. biomass
   d. sound

2. When we use an energy source to make electricity, we have to _____ it.
   a. mine
   b. decrease
   c. convert
   d. bury

3. When a fuel is used to make electricity, most of the energy released is in the form of _____.
   a. heat
   b. electricity
   c. light
   d. motion

4. Which of the following is not a fossil fuel?
   a. coal
   b. petroleum
   c. sunlight
   d. natural gas

5. Electricity is made by the turning of a _____.
   a. heat
   b. steam
   c. switch
   d. generator

6. Many power plants use steam to make electricity. The steam's _____ moves a turbine.
   a. light
   b. motion
   c. heat
   d. sound

Name: _____

7. Which is a byproduct or effect of using coal to make electricity?
   a. carbon dioxide
   b. coal dust
   c. habitat loss
   d. all of the above

8. If we use more energy, more _____ are produced.
   a. byproducts
   b. energy sources
   c. hydroelectric dams
   d. chemical pollutants

9. Which of our energy sources have no costs, only benefits?
   a. Solar, wind, and hydropower have no costs.
   b. They all have costs and benefits.
   c. Biomass, coal, and natural gas have no costs.
   d. Geothermal power has no costs.

10. _____ is one way to mitigate the effect of the byproducts of energy production on the environment.
    a. Radiation
    b. Generation
    c. Conservation
    d. Motion

## Part 2

**Instructions:** Read the questions and answer each using complete sentences. (5 points each)

11. Choose one energy source used in the California "power mix" and describe the conversion process from the source to your house.

12. Explain how the use of an energy source creates byproducts.

13. Describe how one byproduct of an energy source enters a natural system and how it affects the environment.

14. How does conserving energy benefit or reduce the effects on natural systems?

Name: _____

## Part 3

**Instructions:** Complete the table below. (2 points each correct cell)

15. What is one cost and one benefit of using each of these energy sources?

| Energy Source | Cost | Benefit |
|---|---|---|
| **Hydropower** | | |
| **Wind Power** | | |
| **Natural Gas** | | |
| **Solar Power** | | |
| **Biomass** | | |

Name: _____

**Instructions:** In this assignment, you will be creating a booklet to teach others about the California "power mix." The booklet will have one page for each of the energy sources you have studied. Follow this basic outline to create your booklet:

- Page 1: Identify eight energy sources in California's current "power mix."
- Pages 2–17: Give each energy source two pages (back and front of one piece of paper). Write the name of the source at the top of the pages. For each energy source, answer the questions shown in the table below.
- Cover: Put **Energy: It's Not All the Same to You!** on the cover for your booklet and staple the pages together.

| **Energy Source:** _____ |
|---|
| **Describe how we get electricity from this energy source:** |
| **Describe one or more byproducts created by using this source:** |
| **Tell how the byproducts of this source get into natural systems:** |
| **Tell how the byproducts of this source affect natural systems:** |
| **Describe the "costs and benefits" of this energy source:** |

Name: _____

## Energy: It's Not All the Same to You! Booklet Scoring Tool

| | 3 points | 2 points | 1 point |
|---|---|---|---|
| **Identifies the energy sources** | Correctly identifies all eight sources. | Correctly identifies four to six energy sources. | Correctly identifies one to three energy sources. |
| **Describes how we get energy from the source(s)** | Shows clear understanding of how we get and use energy from each of the eight sources. | Shows understanding of how we get and use energy from four to six energy sources. | Shows understanding of how we obtain and use energy from one to three sources. |
| **Identifies byproducts** | Clearly identifies one or more byproducts from each of the eight energy sources. | Identifies one or more byproducts from four to six energy sources. | Identifies one or more byproducts from one to three energy sources. |
| **Describes how byproducts enter natural systems** | Clearly tells how one or more byproducts from each of the eight energy sources enter natural systems. | Clearly tells how one or more byproducts from four to six of the energy sources enter natural systems. | Clearly tells how one or more byproducts from one to three of the energy sources enter natural systems. |
| **Explains how byproducts affect natural systems** | Clearly tells how one or more byproducts of each of the eight energy sources affect natural systems. | Clearly tells how one or more byproducts of four to six of the energy sources affect natural systems. | Clearly tells how one or more byproducts of one to three of the energy sources affect natural systems. |
| **Explains usefulness (cost/benefit)** | Clearly describes one or more costs and benefits of each of the eight energy sources. | Clearly describes one or more costs and benefits of four to six of the energy sources. | Clearly describes one or more costs and benefits of one to three of the energy sources. |

Your booklet is due on: _____.


California STATE BOARD OF EDUCATION

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